

## STORMS AND WEATHER WARNINGS

## WASHINGTON FORECAST DISTRICT

On the morning of the 3d fresh to strong winds were forecast for the middle and north Atlantic coast in connection with a disturbance over the Upper Lakes. The disturbance moved very rapidly eastward during the next 24 hours and strong winds occurred, reaching gale force at times from Sandy Hook northward.

On the morning of the 6th southeast warnings were ordered from New London, Conn., to Portland, Me., in connection with a low-pressure center off the New Jersey coast, which was apparently increasing in intensity. The warnings were ordered down the same night, as the disturbance moved so rapidly northeastward that the winds shifted to west and were only fresh to strong.

The evening of the 13th northeast warnings were hoisted between Sandy Hook and Boston in connection with a disturbance near Hatteras; and on the following morning were extended northward to Eastport. Strong winds occurred as indicated in the warnings.

On the morning of the 16th a disturbance of considerable intensity was over Lake Michigan and southwest storm warnings were hoisted from Norfolk to Eastport. During the next 12 hours the disturbance decreased in intensity and warnings were lowered that night south of Delaware Breakwater. Winds were only fresh to strong.

On the morning of the 18th northwest storm warnings were ordered from Bay St. Louis, Miss., to Cedar Keys, Fla., and strong winds occurred. On the following morning, with a disturbance of considerable energy over Georgia, northeast storm warnings were hoisted from Wilmington, N. C., to Boston, for strong northeast winds and gales accompanied by rain and snow, and small craft warnings were ordered from Mobile to Key West. Northeast warnings were continued on the 20th from Boston to Sandy Hook and extended north of Boston to Eastport. Gales accompanied by snow and rain occurred generally along the middle and north Atlantic coast.

Southeast warnings were ordered the evening of the 25th from Sandy Hook to Eastport. On the afternoon of the following day these were changed to northwest, and were continued on the 27th, but ordered down the morning of the 28th. Strong winds and gales occurred substantially as indicated in the advices.

A cold-wave warning was issued for northwest Ohio on the morning of the 8th, and on the evening of that date for Kentucky; but, while the temperature fell, the change was gradual.

On the morning of the 14th heavy snow warnings were disseminated for northern New England.

Cold-wave warnings were ordered the evening of the 17th for Kentucky, Ohio, central and western Tennessee, and northern Mississippi, and on the following morning warnings were distributed for freezing temperature in the interior of Alabama and Mississippi and near freezing along the east Gulf coast. These warnings were verified, although temperatures did not fall quite as low as anticipated.

On the 19th warnings of freezing temperature nearly to the coast were issued for Georgia and Alabama and near freezing in extreme northern Florida. The temperatures indicated were not reached in places owing to a continuation of the cloudiness.

On the 20th the possibility of light frost was indicated for Alabama, Mississippi, and northwest Florida, and light frosts occurred.

Heavy snow warnings were ordered for New England, western Pennsylvania, and New York on the morning of the 20th, and were verified, except in southeastern New York and southern New England, where the precipitation was partly in the form of rain.

Warnings for light frost were disseminated on the morning of the 26th for South Carolina, Georgia, southeast Alabama, and portions of northern Florida. These were verified.—*R. H. Weightman.*

## CHICAGO FORECAST DISTRICT

February, 1927, in this district was unusually mild. At the same time precipitation was deficient almost generally. From the foregoing it would be natural to infer that the occurrence of weather conditions calling for special warnings was less frequent than usual. And such was the case.

*Cold waves.*—From time to time during the month a few cold waves of more or less limited geographic extent occurred in northern portions of the district, while one cold wave advanced southward across Kansas and northwestern Missouri. In the Middle Mississippi and Lower Ohio Valleys, however, the month passed without any cold waves. The dates on which cold-wave warnings were issued were the 3d, 7th, 8th, 11th, 14th, and 17th. The warnings on the 8th and 17th were the most general in scope. Conditions on the morning of the 17th appeared to be almost ideal for a general cold wave in the eastern and southern portions of the district, but both the high and low concerned took unusual courses. These movements resulted in north and northeast winds in the southeastern States of the district and, although a marked fall in temperature occurred as a rule, the minimum temperatures fell many degrees short of the figure required.

*Advisory warnings for Lake Michigan.*—Disturbances affected Lake Michigan every two or three days in succession during most of the month, and it was necessary to issue advisory warnings for shipping on a number of occasions. The most severe storm was that of the 17th–18th, when strong north or northeast winds and gales prevailed over most of the Lake.

*Stock warnings.*—Only one warning of this character was issued, namely, that on the 17th for Kansas and Nebraska. This was in connection with the cold wave that occurred in those States on the 17th–18th.—*C. A. Donnel.*

## NEW ORLEANS FORECAST DISTRICT

Areas of low pressure were dominant during the greater part of the month and temperatures averaged unseasonably high, but cold waves were not entirely absent. The most extensive cold wave occurred on the 17th–19th, and less extensive ones, limited to the more northern sections of the district, on the 9th–10th and the 28th. Timely warnings were issued for all of the cold waves, with livestock warnings where severe conditions were indicated.

On the 16th, the p. m. map showed a well-defined trough of low pressure extending eastward from the Pacific coast to the lower Missouri Valley and an area of high pressure, attended by severe cold, was advancing southward from western Canada. Cold-wave warnings were issued for Oklahoma and the Texas Panhandle. The next morning more intense conditions prevailed, with the depression central over southern Kansas, and

the warning was extended over the remaining interior sections. On local indications the official in charge at Galveston displayed northwest storm warnings at 4:30 p. m. At 8 p. m. of the 17th northwest storm warnings were ordered from Morgan City, La., to Brownsville, Tex., with extension of cold-wave warnings to the Texas coast and over southwestern Louisiana; and at 8:40 a. m. of the 18th storm and cold-wave warnings were issued for the remainder of the Louisiana coast. Gales occurred, as predicted, along the entire Texas coast, and there were destructive tornadoes in a few localities in northern Louisiana.

Small-craft warnings were displayed on the Texas coast on the 9th and 23d and were justified. Northeast storm warnings were ordered displayed on the Texas coast at 8:30 p. m. of the 27th, but the increase in wind velocity was gradual and not sufficient on the 28th to justify storm warnings.

Frost warnings were issued on the 20th for the coast sections of Louisiana and Texas, except for the Lower Rio Grande Valley, and on the 25th for northern Louisiana. Towards the close of the month, vegetation was sufficiently advanced in the eastern portion of the district for frost warnings as far north as Little Rock, Ark.

"Norther" warnings for Tampico, Mexico, were issued on the 9th and 18th.—*R. A. Dyke.*

#### DENVER FORECAST DISTRICT

Low pressures prevailed in Alaska, western Canada, and on the extreme north Pacific coast from the 1st to the 4th, attended by frequent snows in Montana, northwestern Wyoming, and northern Utah, with temperatures much above normal until the 5th. High pressures in the northwestern sections from the 5th to the 8th, together with a moderate depression that remained over the Southwest, were attended by snows from Montana southward to Colorado and by colder weather that had extended on the 8th to southeastern New Mexico. Low pressures continued in the southern portion of the district until the 14th, and a disturbance of marked intensity advanced from the north Pacific coast southeastward across Colorado during the period from the 13th to the 16th. Precipitation resulted in about all portions of the district from the 12th to the 17th, with the heaviest in western Colorado, northern New Mexico, Arizona and Utah. Severely low temperatures east of the Divide in Montana on the 16th, 17th and 18th accompanied the advance of a high from Alberta. A low of marked intensity, from Alaska, that extended southeastward across the northern and eastern portions of the district from the 18th to the 23d was attended by snow or rain as far southward as Colorado and northern New Mexico. The last important storm of the month developed over the southern portion of the Rocky Mountain region on the 26th and advanced, with decreasing intensity, to southwestern Texas on the 28th. Precipitation resulted from Montana southward to northern Arizona and northern and eastern New Mexico.

Warning of a moderate cold wave in eastern Colorado, extreme eastern New Mexico, and southern Wyoming was issued on the morning of the 8th. The warning was fully verified. Warning of a moderate cold wave in northeastern Wyoming and east of the divide in Montana, which was also fully verified, was issued on the morning of the 12th. On the morning of the 14th warning was issued of a moderate cold wave east of the divide in Montana, and the warning was extended on the evening of the same day to include Wyoming. Verifica-

tion was received in eastern Montana, but the warning failed of verification in Wyoming, owing to the development of a Low over the southern portion of that State. On the morning of the 16th warning was issued of a severe cold wave immediately east of the divide in Montana and in northern Wyoming. The warnings were extended on the evening of the 16th to include all of Wyoming, and moderate cold-wave warnings were issued for eastern and central Colorado. Severe cold-wave warnings were issued on the morning of the 17th for eastern Colorado and moderate cold-wave warnings for that portion of New Mexico east of the mountains. The warnings were verified except in western Wyoming. Warning of a moderate cold wave in extreme western Colorado and southern Utah, issued on the morning of the 28th, was verified in southwestern Colorado and extreme southeastern Utah.

A cold wave without warning occurred in eastern Montana on the 8th, owing to the unexpected strengthening and slow movement of a high over that region. The cold wave, for which warnings were issued on the 28th, extended to southeastern Colorado, for which section warnings had not been prepared.

Warning of heavy snows in southwestern Colorado, northeastern Arizona, and southern Utah was issued on the morning of the 12th, together with livestock warnings for those sections. Heavy snows continued in the region specified until the night of the 16th-17th.

Forecasts of strong winds in eastern Colorado and Wyoming were issued in the interests of aviation on the 1st, 2d, 3d, 15th, 16th, 18th, 19th, 20th, 21st, and 22d. These were generally verified.—*J. M. Sherier.*

#### SAN FRANCISCO FORECAST DISTRICT

At the beginning of February the pressure over the greater part of the northeast Pacific Ocean was quite low and the subpermanent high-pressure system normally found between California and Hawaii was considerably south of its usual position. Weather conditions over the far western portion of the continent above latitude 35° were much disturbed in consequence; rains were of frequent and general occurrence, and southerly gales prevalent along the north coast. Warnings for the latter, which had been displayed on the Oregon-Washington coast on January 31, were continued almost uninterruptedly, with occasional extensions to cover Puget Sound and the northern California coast, until the 5th, when the pressure rose over the ocean east of the 140th meridian, and several days of comparatively undisturbed weather intervened. Frost warnings, incident to this pressure rise, were issued from the 8th to the 11th, inclusive, for orchard areas in northern California.

Although the barometer was high during the latter period over the far western States and for some distance westward, a change of unusual significance was taking place in the pressure situation over the northeast Pacific Ocean as a whole, which resulted in conditions thereover which were without parallel since the charting of ocean pressures was begun at the San Francisco forecast center, with the possible exception of the period April 1-5, 1926, when a situation similar in type, if not in intensity and length of duration, prevailed. The characteristics peculiar to both these periods were as follows: (1) The development of an oceanic low in the south end of a trough overlying the middle Pacific Ocean, (2) the simultaneous development of a low over the southwestern United States, and (3) the gradual dissolution of the high-pressure ridge which lay between these two low-pressure sys-